

FUEL OILS BASED ON MIDDLE DISTILLATES AND COPOLYMERS OF
ETHYLENE AND UNSATURATED CARBOXYLIC ESTERS

CROSS-REFERENCE TO RELATED APPLICATION

5 The present application is a continuation-in-part of U.S. Application Serial No. 09/111,548, filed on July 7, 1998, now abandoned.

*EDT
8/04*

FIELD OF THE INVENTION

The present invention relates to fuel oils which comprise middle distillates and
10 copolymers of ethylene and esters of unsaturated carboxylic acids and which exhibit
improved cold flow behavior.

BACKGROUND OF THE INVENTION

Crude oils and middle distillates such as gas oil, diesel oil or heating oil, obtained by
15 distillation of crude oils, contain, depending on the origin of the crude oils, different
amounts of n-paraffins, which crystallize out as lamellar crystals when the
temperature is lowered and in some cases agglomerate with inclusion of oil. This
results in a deterioration in the flow properties of these oils or distillates, giving rise
to problems, for example in the recovery, transport, storage and/or use of the
20 mineral oils and mineral oil distillates. In the case of mineral oils, this crystallization
phenomenon can lead to deposits on the pipe walls during transport through
pipelines, especially in the winter, and in individual cases, for example when the
pipeline is shut down, even to complete blockage thereof. The precipitation of
paraffins can also cause difficulties in storage and further processing of the mineral
25 oils. Thus, it may be necessary in winter to store the mineral oils in heated tanks. In
the case of mineral oil distillates, blockage of the filters in diesel engines and
furnaces may occur owing to the crystallization, with the result that reliable metering
of the fuels is prevented and complete interruption of the fuel or heating medium
feed may occur.

30

In addition to the traditional methods for eliminating the paraffins which have
crystallized out (thermally, mechanically or by means of solvents), which relate only